SARDAR RAJA COLLEGE OF ENGINEERING ALANGULAM

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

LESSON PLAN

SUBJECT : COMPUTER NETWORKS

CODE : EC62

CLASS : III Year / VI SEM

Assistant Professor: Ms. D.BEAULAH PRINCIBA,

DEPT. OF ECE.

SARDAR RAJA COLLEGE OF ENGINEERING, ALANGULAM

EC62 – COMPUTER NETWORKS

AIM

To introduce the concept, terminologies, and technologies used in modern data communication and computer networking.

OBJECTIVES

- To introduce the students the functions of different layers.
- To introduce IEEE standard employed in computer networking.
- To make students to get familiarized with different protocols and network components.

TEXTBOOKS:

1. Behrouz A. Foruzan, "Data communication and Networking", Tata McGraw-Hill, 2006: Unit I-IV

2. Andrew S. Tannenbaum, "Computer Networks", Pearson Education, Fourth Edition, 2003: Unit V

REFERENCES:

1. Wayne Tomasi, "Introduction to Data Communication and Networking", 1/e, Pearson Education.

2. James .F. Kurouse & W. Rouse, "Computer Networking: A Topdown Approach Featuring",3/e, Pearson Education.

3. C.Sivaram Murthy, B.S.Manoj, "Ad hoc Wireless Networks – Architecture and Protocols", Second Edition, Pearson Education.

4. Greg Tomshon, Ed Tittel, David Johnson. "Guide to Networking Essentials", fifth edition, Thomson India Learning, 2007.

5. William Stallings, "Data and Computer Communication", Eighth Edition, Pearson Education, 2000.

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SYLLABUS

UNIT I: PHYSICAL LAYER **9**

Data Communications – Networks - Networks models – OSI model – Layers in OSI model – TCP / IP protocol suite – Addressing – Guided and Unguided Transmission media.Switching: Circuit switched networks – Data gram Networks – Virtual circuit networks Cable networks for Data transmission: Dialup modems – DSL – Cable TV – Cable TV for Data transfer.

UNIT II: DATA LINK LAYER **10**

Data link control: Framing – Flow and error control –Protocols for Noiseless and Noisy Channels – HDLC Multiple access: Random access – Controlled access. Wired LANS : Ethernet – IEEE standards – standard Ethernet – changes in the standard – Fast Ethernet – Gigabit Ethernet. Wireless LANS: IEEE 802.11–Bluetooth. Connecting LANS: Connecting devices - Backbone networks - Virtual LANS. Virtual circuit networks: Architecture and Layers of Frame Relay and ATM.

UNIT III: NETWORK LAYER **9**

Logical addressing: IPv4, IPv6. addresses Internet Protocol: Internetworking – IPv4, IPv6 - Address mapping – ARP, RARP, BOOTP, DHCP, ICMP, IGMP, Delivery - Forwarding - Routing – Unicast, Multicast routing protocols.

UNIT IV: TRANSPORT LAYER **7**

Process-to-Process delivery - User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QoS) – Techniques to improve QoS.

UNIT V: APPLICATION LAYER **10**

Domain Name System (DNS) – E-mail – FTP – WWW – HTTP – Multimedia Network Security: Cryptography – Symmetric key and Public Key algorithms - Digital signature – Management of Public keys – Communication Security – Authentication Protocols.

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MICRO LESSON PLAN

S.NO	WEEK	TOPIC	T/ R BOOK NO.	PAGE. NO	A /V CLASS
UNIT I: PHYSICAL LAYER					
1	**I**	Data Communications, Networks, Networks models	T1	2 – 7 21 - 34	
2		OSI model – Layers in OSI model	T1	43 - 56	
3					
4		TCP / IP protocol suite, Addressing	T1	56 - 57	
5		Guided and Unguided Transmission media	T1	187 - 211	
6	**II**	Switching: Circuit switched networks	T1	431 - 441	yes
7		Packet switching: Data gram Networks, Virtual circuit networks	T1	441 - 447	
8		Cable networks for Data transmission: Dialup modems	T1 T2	245 – 253 169 - 177	
9		DSL	T1	254 - 256	
10		Cable TV, Cable TV for Data transfer.	T1	257 - 258	
UNIT II: DATA LINK LAYER					
11	**III**	Data link control: Framing, Flow and error control	T1	301 - 321	
12		Protocols for Noiseless and Noisy Channels	T1	329 - 340	
13		HDLC	T1	340 - 357	
14		Multiple access: Random access	T1		
15		Controlled access	T1		

16	**IV**	Wired LANS : Ethernet: IEEE standards	T1	369 - 380	yes
17		Standard Ethernet, Changes in the standard	T1	380 - 381	
18		Fast Ethernet, Gigabit Ethernet	T1	382 - 385	
19		Wireless LANS : IEEE 802.11	T2	292 - 302	
20		Bluetooth.	T2	310 - 317	
21	**V**	Connecting LANS: Connecting devices, Backbone networks	T1	613 – 625 26	
22		Virtual LANS, Virtual circuit networks: Architecture and Layers of Frame Relay	T1	777 – 782 525 - 535	
23		ATM.	T1	553 - 581	
UNIT III: NETWORK LAYER					
24	**V**	Logical addressing: IPv4	T1	710 - 714	
25		IPv6 addresses	T1	855 - 865	
26	**VI**	Internet Protocol: Internetworking, IPV4	T1	707 - 709	
27		IPV6	T1	854 - 865	
28					
29		Address mapping – ARP, RARP, BOOTP, DHCP	T1	719 – 720 739 - 740	
30		ICMP, IGMP	T1	721	
31	**VII**	Delivery, Forwarding	T2	412 - 415	
32		Routing	T1	620 - 640	yes
33		Unicast , Multicast routing protocols.	T2	14 – 16 711 - 715	
UNIT IV: TRANSPORT LAYER					
34	**VII**	Process-to-Process delivery	T1	649 - 658	
35		User Datagram Protocol (UDP)	T1	721 - 723	
36	**VIII**	Transmission Control Protocol (TCP)	T1	723 - 725	
37		Congestion Control	T1	535 - 537	
38		Quality of services (QoS)	T1	576 - 578	

39 **40**		Techniques to improve QoS.	T1 T2	537 – 540 398 - 409	
UNIT V: APPLICATION LAYER					
41	**IX**	Domain Name System (DNS)	T1	740 - 742	
42		E-mail, File Transfer Protocol (FTP)	T1	745 - 751	
43		Hypertext Transfer Protocol (HTTP), World Wide Web (WWW)	T1	755 - 765	yes
44		Multimedia Network Security: Cryptography	T1	793 - 803	
45		Cryptography - Symmetric Key, Public Key Algorithms	T2	724 - 751	
46	**X**				
47		Digital signature	T1 T2	797 – 800 755 - 765	
48		Management of Public keys	T2	765 - 771	
49		Communication Security, Authentication Protocols	T2	772 - 799	